Second, various areas of the state waters may be closed for short periods of time when DCNR personnel find that migratory shrimp are below harvestable size. When sampling in these areas indicates shrimp have grown large enough, the areas are reopened for shrimping.

These measures are meant to ensure that shrimp will be of legal size and that enough adults will escape to spawn offshore and provide the next year's harvest.

Shrimp Abundance And Environmental Factors

A single female shrimp will produce 500,000 to 1,000,000 eggs. Only a tiny percentage of these will hatch and survive the inshore migration to the marshes. Fewer still will survive the numerous predators in the marsh which prey on the young shrimp for food.

Despite the incredible losses each year, enough will survive to spawn and continue the cycle. In fact, shrimp are capable of producing so many young that the shrimp harvest does not appear to be dependent upon the number of shrimp present the previous year. Instead environmental factors, especially large amounts of freshwater from spring flooding and cooler than normal water temperatures, seem to control the number of adult brown shrimp available each year.

Long periods of high river flow reduce the salinity of the nursery areas which, when combined with a late arriving spring, may result in poor conditions for survival and growth of juvenile brown shrimp.

Shrimp abundance fluctuates from year to year depending on the weather. However, the long-term health of the shrimp population depends on the preservation of coastal Alabama marshes which provide food and protection for the postlarval shrimp.

ALABAMA COOPERATIVE Extension SYSTEM

ANR-1028 **MASGP-96-010**

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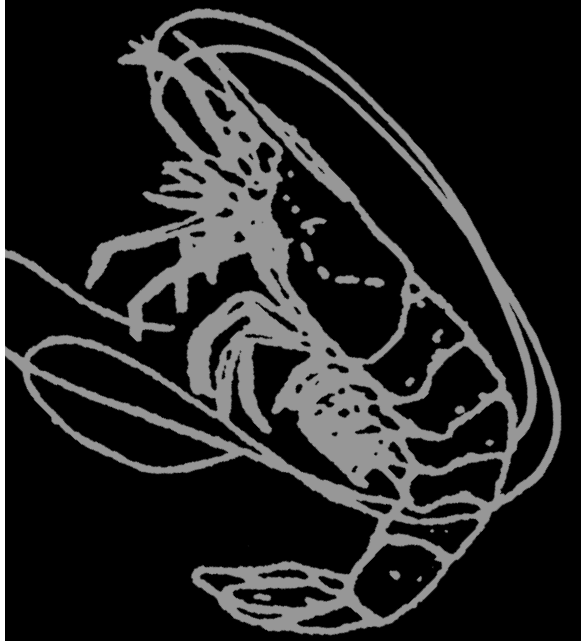
Shrimp

IN ALABAMA



ANR-1028

MASGP-96-010

Shrimp

IN ALABAMA

Shrimp, along with crabs, lobsters, and crayfish, are among the kinds of invertebrates called decapods (ten feet) that are included in the class Crustacea. There are about 8,500 species of decapods, including 2,000 species of shrimp, in the marine and freshwaters of the world.

Alabama waters contain 15 to 22 species of shrimp. Of these only three—the brown shrimp (Penaeus aztecus), the white shrimp (P. setiferus), and the pink shrimp (P. duorarum)—are eaten and found in commercial quantities. The brown shrimp is by far the most abundant, the white shrimp less abundant, and the pink shrimp much less abundant than the other two.

Approximately 20.5 million pounds of the three species of shrimp were landed in Alabama in 1995 with an estimated dockside value of $45 million.

Identification

The three species of shrimp are very similar in appearance but can be distinguished by the following features.

The brown and pink shrimp have grooves on either side of the spine on the back of the head; they have similar grooves on the last body segment before the tail segment (Figure 1). The white shrimp does not have either set of grooves and is easily distinguished from the other two.

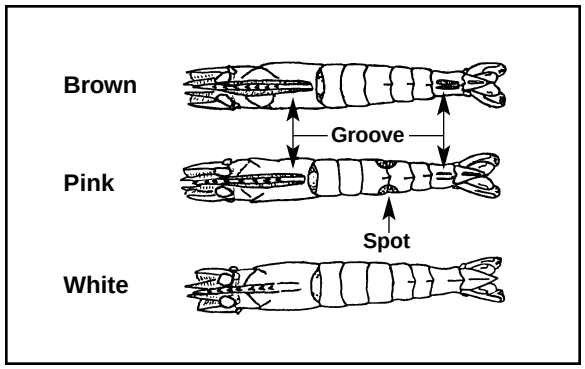


Figure 1.

The pink shrimp can be identified by a dark (sometimes pinkish-red) blotch on each side of the body about halfway between the back edge of the head and tail. This blotch does not occur on the brown shrimp.

Biology

The brown, white, and pink shrimp spawn in the offshore waters of the Gulf of Mexico. The eggs hatch, and the microscopic shrimp pass through a number of developmental stages (Figure 2). During this time, the tiny shrimp (postlarvae) are carried by tides and currents into the shallow, marshy areas of Mobile Bay and Mississippi Sound.

In the protected, productive marshes, the postlarvae feed on a rich variety of food items and grow rapidly into juvenile shrimp. As the postlarval shrimp develop into juveniles (about 1 to 2 inches in length), they begin to leave the protected areas of the marsh for the bays and sounds. Here, the juveniles grow to adult and harvestable size (68-to the pound with heads on). Adult shrimp then continue to move to the deeper waters of the Gulf to spawn and complete their life cycle. The time period from egg to spawning adult is about 1 year. Most shrimp do not survive to spawn again.

While all three species have this basic life cycle, each differs in the time of spawning and time of migration. Brown shrimp spawn offshore from November to April. Young adults move out of the protected marsh areas from May to July and are harvested in large numbers during this period.

White shrimp spawn offshore from March to October. Juvenile whites appear to tolerate freshwater better than brown shrimp and may be found in very low salinity water. The young adults migrate to offshore waters from July to November and are caught primarily during these months.

Pink shrimp spawn offshore from May through November and migrate out of the marshes from April to September. Pink shrimp are most often caught in the early spring.

The different life cycles explain why each species is most abundant during certain times of the year. An understanding of these life cycles serves as a basis for shrimp management plans undertaken by the Alabama Department of Conservation and Natural Resources (DCNR), Marine Resources Division.

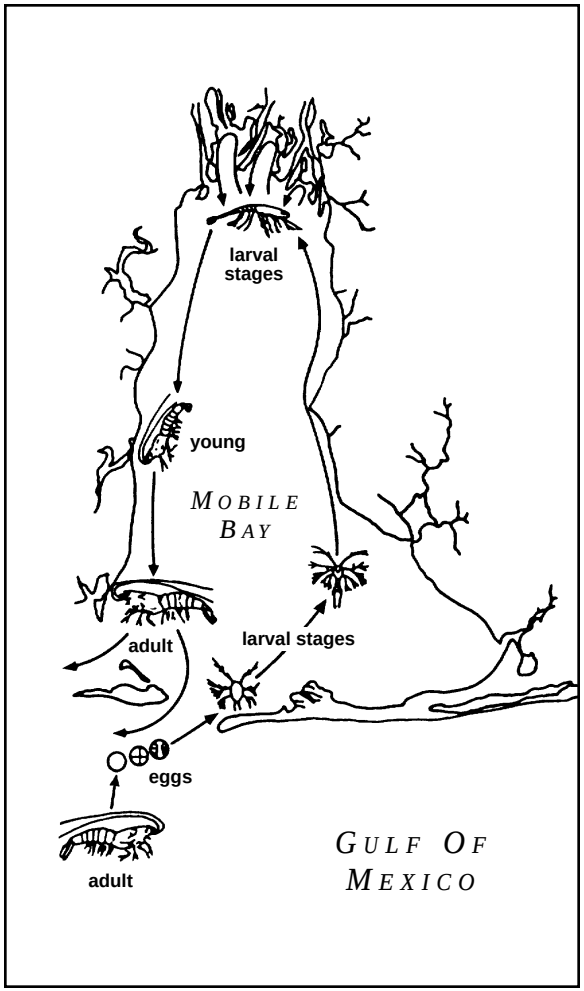


Figure 2. Generalized schematic of shrimp life cycle in coastal Alabama.

Management

The Alabama DCNR manages shrimp primarily by protecting young shrimp in two ways. First,the most productive nursery grounds, such as Weeks Bay, are permanently closed to all shrimping activities. This allows the juveniles to grow to a harvestable size and reduces damage to the fragile marsh from fishing activities.